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ABSTRACT

This study was undertaken to compare the variables related to the successful institutionalization of changes across divergent organizations, and to design, through cross-validation, an interorganization model of change. Descriptive survey questionnaires and structured interviews were the instruments used. The respondent sample consisted of 1,500 subjects, representative of those individuals in elementary school, higher education institutions, and correctional facilities, who were involved in the change process in their organizations. Data were analyzed through an item analysis, factor analysis, and multiple regression technique. The designed change model predicted more than 60 percent of the variance related to institutionalization of a change program. (Author)

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A CONTINGENCY MODEL FOR PREDICTING INSTITUTIONALIZATION OF INNOVATIONS ACROSS DIVERGENT ORGANIZATIONS

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EA 009 311

TABLE OF CONTENTS

CONCEPTUAL FRAMEWORK FOR THE STUDY

Statement of the Problem

In recent years, there has been an ever increasing interest in and demand for improving the productivity and effectiveness of both public and private organizations. To implement these improvements, managers have acquired new roles (e.g. change agent roles) and new specialists (e.g. organizational development and systems theorists and consultants) have worked to develop and pilot new change technologies and strategies.

Despite these developments, however, relatively few of the desired changes have been successfully institutionalized. An increasing number of studies (Huse, 1975; Cogan, 1976; and Rand, 1974-1976) have found that most innovations are implemented poorly or not at all.

Why haven't change theorists and organizational specialists been more successful in identifying and disseminating useful and practical information about change? Several reasons have been given for this situation. Bennis (1966, 1969) believed that the change theorists had failed to establish a viable, dynamic theory of changing because they had not identified the strategic, manipulable levers of changing. Campbell and Dunnette (1968) believed that training programs and workshops on changing had failed to provide managers with a lasting set of attitudes, knowledge or skills for dealing with change because they had not been systematic in training the managers to work within the present limitations of their own organizations. Becker and Whisler (1967) and Guba (1968) believed that most innovations had failed because the process

of innovation, the nature of innovation itself, the nature of the adopting systems and the nature of the agency or mechanism carrying out the innovation were not clearly understood; a very complex process, indeed. It is this researcher's belief that these criticisms are still valid today.

Background of the Study

In 1974 and 1976, Howes (attempting to deal with some of the major criticisms of change models) proposed an exploratory, descriptive model of changing which: (1) considered the various dimensions of an organization; (2) identified certain strategic levers of changing which a manager could manipulate; and, (3) focused on the interactive nature of change variables as input, process and output factors. In three separate studies across four organizational settings (elementary schools, school districts, higher educational institutions and correctional facilities), Howes used multiple regression analyses to identify the set of predictor variables in each setting which were most strongly related to the successful institutionalization of a selected change program. Initially, 61 different variables were examined. (The 61 variables selected for study were those most often analyzed and subsequently believed to be or found to be significantly related to planning and implementing innovations.) To identify the set of variables which were common to more than one setting, Howes isolated those variables which occurred in two or more of the refined regression models for each setting and placed them in an inter-organizational chart. The principle followed in grouping variables in this fashion was that variables critical to implementation would be found in more than one regression model. Figure 1 presents this synthesized list of predictor variables.

Altogether, 26 different predictor variables were identified. Thirteen variables were included in two organization's regression models, 11 were included

Figure 1

Variables Predictive of Institutionalization of Innovations Across Divergent Organizations

Variables	Elementary Schools	School Districts	Higher Education Institutions	Correctional Facilities
A. CHANGE ITSELF				
1. Respondent groups approve of the change	X	X	X	X
2. The change is easy to understand	X	X		X
3. Respondents believe change has relative advantage	X		X	
B. CHANGE PROCESS				
1. Effective/efficient communication networks established between groups		X	X	X
2. Shared decision making used between groups	X	X		X
3. Provided materials and resources are adequate and useful	X		X	X
4. Change's objectives are clearly identified	X		X	X
5. Change's research findings are identified	X	X		X
6. Change's implementation (design) guidelines are identified			X	X
7. Problem solving meetings scheduled when needed	X	X	X	X
8. Useful orientation and inservice training provided	X		X	
9. Groups kept informed of each other's activities	X	X	X	
10. Groups adequately involved in designing the change	X		X	
C. CHANGE ROLES				
1. Administrators concerned with user's thoughts about change	X		X	X
2. Administrators support user's change efforts	X			X

Figure 1 - Continued

Variables	Elementary Schools	School Districts	Higher Education Institutions	Correctional Facilities
C. CHANGE ROLES (continued)				
3. Administrators meet users often enough	X			X
4. Administrators approve of change	X		X	X
5. Administrators provide necessary change information	X		X	
D. FORMAL ORGANIZATIONAL STRUCTURE				
1. Users' change roles clearly identified (no conflicting expectations)			X	X
2. Effective communication networks established	X	X		X
3. Adequate support personnel in organization		X		X
4. Users have freedom to determine change roles			X	X
5. Organizational rules relaxed	X			X
6. Users held accountable for change roles	X	X	X	
7. Users participate in organizational decision making	X	X		
8. Organization is complex and specialized	X	X		
TOTAL NUMBER OF PREDICTOR VARIABLES	20	12	16	18

in three regression models, and two were included in all four regression models. Three of the variables related to the change itself, ten related to the change process, five related to the change agent roles and eight related to the formal organizational structure.

The predictor variables which were common to three or four organizations were proposed as the basic descriptors of a change model. They were:

....change groups approving of the change;

....the change being easy to understand;

....effective/efficient communication networks being established between change groups;

....decision making being shared between change groups;

....the provided materials and resources being adequate and useful;

....the change program's objectives being clearly identified;

....the change program's research findings being clearly identified;

....problem solving meetings being scheduled when implementation problems were encountered;

....change groups being kept informed of each other's activities;

....administrators being concerned with what the users thought about the change program;

....administrators approving of the change;

....effective lateral communication networks existing within the organization; and,

....change groups being held accountable for their change roles.

When these findings were reviewed, a number of researchers criticized the procedures used in identifying the predictors. At issue was the small number of respondents and large number of variables initially handled (a 10 to 1 ratio existed for only the elementary schools), the complexity of the proposed model, and the lack of reliability of using single item measures in a multiple regression analysis.

These criticisms prompted the researcher to design a study which would deal with the lack of item reliability and limitation of numbers and would work towards obtaining a more simple structure for analyzing the change process.

Purpose of the Study

The major purpose of this study was to develop a more simple model for predicting, planning and managing change programs across divergent organizations. To achieve this purpose, it was necessary: (1) to identify and compare the study's a priori change factors with the principle component factors; (2) to identify and compare the variance accounted for in predicting successful institutionalization of changes when different regression procedures were used; and, (3) to identify the variables which tended to cluster together (in factors) in the various regression equations.

The baseline data for this project were obtained from the three organizational change studies undertaken by the researcher in 1974 and 1976. The same conceptual model and similar operational measures were used for each study. The four organizational settings were selected because each organization was involved (during the study) in institutionalizing a major innovation. The elementary schools, school districts and correctional facilities were involved in implementing an individualized educational program and the higher education institutions were involved in designing a competency-based teacher education program. For each organization, performance objectives and external measures were available for assessing the degree to which each institution was able to successfully implement (or design) their change program.

Rationale for the Study

The rationale for this study rests primarily on the theoretical framework of Nadler (1967) and Chestnut (1967) in systems theory and Bennis, Benne and Chin (1969, 1976) in change theory and the empirical framework of Howes (1974, 1976) in planning and institutionalizing change programs.

Nadler and Chestnut believed that organizations could be improved if their needs were first analyzed and their changes then organized in a systematic way. For Nadler, raw inputs, basic processes, sequence of activities, resources, human agents, environmental influences and outputs were the basic system elements of an organization. For Chestnut, the functions of planning, controlling, evaluating and gaining information were basic system functions of managers. Together, these two systems engineers believed that planned change could be managed successfully if each part of the organization was analyzed in relation to the activities which the manager needed to perform. A change in any one component of an organization was viewed in relation to every other component.

The working framework for this study utilized a systems' perspective. In this, the variables of changing were initially studied in terms of the interaction between the change itself (the input), the change activities (the process), and change objectives (the output). The change variables initially selected for study were (a priori) indentified and organized in terms of the major components of an organization and the needed functions of managers in planning and implementing changes.

Bennis, Benne and Chin (1969, 1976) believed that individuals interested in planning for change should analyze four systems (the individual; the required roles; interpersonal or group relations; and, formal organizations, communities or cultural structures) and those interested in institutionalizing change should study the various dimensions of change processes such as social and psychological consequences of change, antecedent conditions for effectively planning change and strategic leverage points for effecting change. The substantive dimensions of change selected in this study encompassed many of the elements of those systems identified by Bennis, Benne and Chin.

Howes (1974, 1976) believed that a generic model of changing could be developed which would account for a large amount of the variance associated with successfully institutionalizing an innovation. In comparing the findings across three separate studies (1974, 1976), she identified a core set of variables (see Background of the Study) and proposed a model of changing related to the formal structure of the organization, the change program itself, the roles assessed by the administration and the activities of the change process. Of particular importance, was the a priori systems framework which she developed to categorize the variables of change. In this framework, the selected variables were categorized in terms of: (1) the change itself; (2) the change process; (3) the role of the change agents; (4) the formal organizational structure; (5) the informal organizational structure; and, (6) the individual administrator and user characteristics.

METHODOLOGY OF THE STUDY

Research Questions

The four research questions for this study were:

1. Are the a priori systems factors of change and the principle component factors of change both necessary for understanding the change process across organizations?
2. What is the difference in the variance accounted for in predicting successful institutionalization of change when four regression procedures of varying complexity are used?
3. Is there a similarity in the regression weights and variance accounted for in each of the simple factor regression structures identified for each organizational setting?
4. What variables of change consistently cluster together within the simple factor regression structures of each organizational setting?

Population and Sample

The population for the study were respondents in 349 elementary schools across the country, 214 school districts across the country, 60 institutions of higher education in New York State and 13 correctional facilities in New York State who had been directly involved in the design or implementation of an organizational innovation. The sample for the study were respondents in 206 elementary schools, 166 school districts, 20 higher educational institutions and 13 correctional facilities. Eleven different respondents groups were involved: (1) randomly selected teachers, unit leaders and principals in the elementary schools; (2) randomly selected curriculum coordinators and superintendents in the school district; (3) selected college deans and education chairpersons and professors in the higher educational institutions; and, (4) all involved teachers and education supervisors and directors in the correctional facilities. Table 1 provides a breakdown of the number of respondents selected and responding from each organization.

Table 1

Rate of Return for the Change Questionnaires by Organizational Setting

	Respondents		
Organizational Setting	Number Sampled	Number Returning Questionnaires	Percent Returning Questionnaires
Elementary Schools	1171	1067	60.2%
School Districts	264	185	70.1%
Higher Educational Institutions	110	60	54.5%
Correctional Facilities	90	61	67.8%

Altogether, 1067 (60.2 percent) of the 1771 respondents in the elementary schools, 185 (70.1 percent) of the 264 respondents in the school districts, 60 (54.5 percent) of the 100 respondents in the higher educational institutions

and 61 (67.8 percent) of the 90 respondents in the correctional facilities returned useable questionnaires. The rate of return for the questionnaires was judged adequate enough to allow for their representation of the total number of individuals sampled.

Instrumentation and Pilot Study

The data for the study was obtained from eleven different questionnaires developed for the eleven different respondent groups in the four organizations. Essentially, all the questionnaires were similar in that they measured the relationship of the major factors and variables of change (identified in a literature review) to the design or institutionalization of an innovation.

Since the instruments were: (1) designed specifically for each organizational setting; (2) multi-faceted; and, (3) concerned with measuring individual perceptions, elaborate procedures were used to ascertain the reliability and validity estimates of the instrument. For the first study (elementary school respondents), fifteen test, change and organizational experts pre-tested the original instruments for content and construct validity and 216 respondents piloted the same instruments for determination of their reliability estimates. For other respondent groups, modifications were made in the instruments so that they could be used within different organizational settings.

Analysis of Data

Several principles were followed in interpreting the research findings of this study. First, the multivariate analyses were used for descriptive, simplifying purposes rather than for statistical, confirming purposes. For example, in designing the simple factor structure for each regression analysis, compromises were made between the a priori systems factors and the principle component factors. In most cases, final factor decisions were based on the

development of a simple and compromised rather than a comprehensive and absolute factor structure. Second, in developing the change model, the elementary school findings were used as a base against which the other findings were compared. (These findings were believed to be more stable and predictive of successful change, since the largest number of the study's respondents (1066 individuals) came from this organizational grouping.) The final contingency change model proposed for this study is a modification of the basic simple structure identified in the elementary school study.

Five basic procedures were followed in addressing the research questions and developing the study's model of changing. First, for each of the organizational settings, the data for each respondent group were collapsed into one data set. Only items (variables) common to all particular respondent groups in that organization were considered for analysis. Second, the data for school districts, higher educational institutions and correctional facilities were re-organized to correspond (item for item) with the collapsed data set (numbering 53 items) from the elementary school respondents. Only those variables common to the elementary schools were selected for analysis across the organizations. Third, a principle component factor analysis (with varimax and orthomax rotation) was used to identify those variables which clustered together to form distinct, common underlying factors. Fourth, a multiple linear regression analysis was used to identify the variance associated with using all the variables, selected variables or selected factors for determining the institutionalization of innovation. Fifth, a congruence analysis (joint occurrence matrix procedure) was used to identify those variables across organizations which consistently clustered together in the simple factor regression models.

FINDINGS OF THE STUDY

Reliability of the Questionnaires

In the earlier studies, an item analysis was used to determine the reliability (measures of internal consistency) and consequent utility of the questionnaires in the study. In general, the overall internal consistency measures (alpha coefficients) for each of the questionnaires were high enough ($\alpha \geq .80$) to conclude that the questionnaires could be useful in dealing with the study's questions. (See Table 2 for an exact description of the alpha coefficients for each questionnaire.)

Table 2

Internal Consistency Measures (Alpha Coefficients) for Each of the Organizational Change Questionnaires

Organizational Setting	Number of Respondent Groups	Number of Respondents	Range in Number of Items	Range in α Coefficients
Elementary Schools	3	1067	65-74	.91, .95, .95
School Districts	2	185	42&61	.82 & .87
Higher Ed. Institutions	3	60	49-67	.83, .88, .93
Correctional Facilities	3	61	88	.91, .92, .95

Answers to the Research Questions

1. Are the a priori systems factors of change and the principle component factors of change necessary for understanding the change process across organizations?

To address this question, a principle components factor analysis was used to identify the underlying structure of the selected variables in each organization. Table 3 identifies the amount of variance accounted for and the average item complexity (a measure of the amount of interaction between factors) of each organization's factor structure. Some of the factors which were identified

across the organizations were: (1) administrator's providing technical support; (2) the implementation process being effectively organized; (3) the individual change groups' accepting the change; (4) lateral communication networks being set up to support the process; (5) technical information (e.g. in-service programs) being set up for the change groups; (6) change roles being clearly defined and rewarded; and, (7) effective problem solving strategies being used to implement the program.

Table 3

Variance Accounted for and Item Complexity for The Principle Component Factor Structures

Organizational Setting	Number of Factors	Average Item Complexity	Amount of Variance Identified
Elementary Schools	10	3.33	.452
School District	8	2.30	.613
Higher Educational Institutions	9	3.95	.733
Correctional Facilities	10	3.19	.426

Although the factor structures accounted for between 43 and 73 percent of the explainable variance of the dimensions of change selected for study, they did not identify a simple factor structure because the item complexity estimates in each setting were quite high, indicating that the items loaded on two or three of the identified factors in each setting. (For a simple factor solution, the average item complexity would be closer to 1.00, and the items would tend to load on just one of the factors.)

Although the high complexity of the items came as no surprise to the researcher who expected the items to be highly interactive, this did present a problem

in terms of developing a simple factor structure for the regression analyses. At this point, therefore, the researcher used the a priori system factors to help develop the final factor structures.

In the earlier studies, the researcher had found that the a priori and principle component factors dealt with different matrixes of items. The a priori factors were seen as more descriptive, static and useful for identifying change systems in organizations (e.g. roles of the change agents), while the principle components factors were seen as more prescriptive, dynamic and useful for identifying the contingent relationships between these change systems (e.g. role of the administrators in providing technical support for the change effort). At that time, it was concluded that the a priori factors were more important for describing change across organizations, while the principle components factors were more important for prescribing change within organizations.

In light of the need to develop a simple factor structure, the earlier conclusions were reviewed and the analysis was taken further. It was hypothesized that the structures suggested by the a priori and principle components factors could be merged into a compromised, super factor structure.

The utility of this new structure could be assessed in the multiple regression analyses. The basic compromised factor structures which were developed for each organization setting related to: (1) the informal/formal structure of the organization; (2) the communications, information exchange and support networks set up by the organization to support the change process; (3) the support roles assumed by managers to assist their subordinates in the change effort; and, (4) the differentiation and integration networks established within each organization to coordinate change efforts.

2. What is the difference in the variance accounted for in predicting successful institutionalization of change when four regression procedures of varying complexity are used?

To address this question, four multiple regression solutions were computed for each organizational setting. The four solutions in order of complexity (high to low) were: (1) individually assigned regression weights for all the variables originally studied; (2) individually assigned regression weights for the selected variables; (3) unit regression weights for the selected variables; and, (4) individually assigned regression weights for the compromised, super factor structure. Table 4 presents the results of these varied analyses.

The four solutions were selected because each one represented a different way to view the process of changing. Although the solution using all items contained the most information about the process, the others provided more reliable and simple solutions. When one moves from the solution using all the questionnaire's items (column 1) to the solution using super factors (column 4), there is a shift away from a more complex, more inflated, less stable and less reliable prediction structure to a more simple, stable, and reliable prediction structure.

When the determination coefficients (for each organizational setting) for each regression procedure were compared, it was discovered that a substantial amount of predicted variance was lost in moving from individual regression weights for all items to regression weights for the super factors. In fact, the amount of variance accounted for dropped from between 69 and 100 percent to between 39 and 58 percent (using the better factor predictors). Despite this finding, it is believed that this loss in prediction is not that statistically or practically significant since a gain in reliability, stability and simplicity is achieved. Although the super factor solution (column 4) is not as predictively powerful (on paper) as the selected item solution (column 2),

Table 4

Predictive Power of Varying Regression Procedures

Organizational Setting	Number of Respondents	Regression Weights-All Items			Regression Weights-Selected Items			Unit Weights-Selected Items			Regression Weights-Factors		
		No. Items	Mult. Corr. Coeff.	Det. Coeff.	No. Items	Mult. Corr. Coeff.	Det. Coeff	No. Items	Mult. Corr. Coeff.	Det. Coeff	No. Items	Mult. Corr. Coeff.	Det. Coeff
Elementary Schools													
1. Teachers	687	69	.884	.781									
2. Leaders	258	66	.925	.855									
3 Principals	121	64	.836	.699									
Total:	1066				38	.804	.646	38	.733	.537	4	.758	.575
School Districts													
1. Coordinators	78	60	.938	.879									
2. Superintendents	107	37	.918	.843									
Total:	185				25	.762	.581	25	.605	.366	4 (6)	.626 (.657)	.392 (.432)
Higher Educational Institutions	60	49	*1.00	1.00	23	.887	.787	23	.580	.336	4 (5)	.642 (.730)	.412 (.533)
Correctional Facilities	61	88	*1.00	1.00	36	.905	.819	36	.311	.097	4 (8)	.386 (.647)	.149 (.419)

*Accounted for due to small number of respondents. This is an exceedingly unreliable statistic.

KEY: Mult. Corr. Coeff. = Multiple Correlation Coefficient

Det. Coeff. = Determination Coefficient, Variance

it is likely that the factored solution is also more stable, accurate, and valid for use with smaller numbers of respondents. (This last point is crucial because having a limited number of respondents is typical of change efforts undertaken in single organizations. Thus, in order for any change model to be useful, it would have to be able to be used with small numbers of respondents.)

When the factor solutions for each organization were collectively analyzed, the super factor models were judged to be useful devices for categorizing the change variables. Altogether, the better super factor structures accounted for between 39 and 58 percent of the variance associated with successful implementation efforts. Furthermore, there even was some degree of consistency across these structures. The same identical factor structure could be identified for the elementary schools and school districts and highly related structures could be identified for the higher educational institution and correctional facilities. In fact, even though the variables were grouped differently in the last two organizations, their factors could be totally subsumed within the first two organization's factor structure. For example, the two correctional facility factors of formal structure and informal structure could be subsumed by the elementary school/school district collapsed factor of formal/informal structure. The over-all predictive ability and comparability of the super factor structures is believed to provide substantial validation of the utility of using these super factor structures.

3. Is there a similarity in the regression weights and variance accounted for in each of the simple factor regression structures identified for each organizational setting?

To address this question, the regression weights (pattern coefficients) and variance predicted for each simple factor structure in each organizational setting were identified and compared. Table 5 presents a breakdown of these findings.

Table 5

Regression Weights and Variance Accounted for by Each Organization's Simple Factor Structure

Factor Structure	Organizational Setting	Regression Weights	Predicted Variance in Percents*
1. Communication/Information Exchange	1/2/3/4	.293/.297/-.024/.067	18/12/01/01
2. Formal and Informal Structure	1/2/3	.084/.337/.198	05/13/11
3. Administrative Support	1/2/3/4	.456/.225/-.038/.090	28/09/02/02
4. Differentiation/Integration	1/2/3/4	.083/.095/.029/-.182	05/04/02/02
5. Informal Approval of the Change	3/4	.650/-.223	35/03
6. Technical Support for the Change	4	.648	27
7. Top Level Administrative Support for Change	4	-.164	02
8. Formal Structure	4	-.107	01
9. Informal Structure	4	.218	02

Total Predicted Variance Across Factors

Elementary Schools (4 factors) = .575
School Districts (4 Factors) = .392
Higher Educational Institutions (5 Factors) = .533
Correctional Facilities (8 Factors) = .419

KEY: Organizational Setting

1 = Elementary Schools
2 = School Districts
3 = Higher Educational Institutions
4 = Correctional Facilities

*Percents are rounded off to nearest whole number

When each organization's simple factor structure was merged with the others, a total of nine separate factors were identified. The basic comparison was then made across the five factors whose variable groupings and factor structures were most similar.

In general, little consistency in factor regression weights or amount of predicted variance (across the organizations) was found. Within factors, the regression weights varied from low (.024) to moderate weightings (.650) and the amount of explained variance ranged from .01 to .35 percent. In addition, the largest predictor factors in each organizational setting were all different from each other.

This finding tends to suggest that the nature of each organization's regression model, though similar in the basic elements of change (e.g. there appeared to be a comparable simple structure), was dynamic. Though it is possible to identify important factors across organizations,.it is not seemingly possible to identify the relative strength or importance of any one factor within organizations.

4. What variable of change more consistently cluster together within the simple factor regression structures in each organizational setting?

To address this question, a congruence analysis was used to identify the number of times all the possible pairs of variables appeared in the same regression factor across organizations. This technique, another descriptive explanatory technique, was selected because it provided an additional way in which the nature of the rather dynamic change factors across all organizations could be explored and analyzed.

Of the 52 variables examined by this process, 28 were found to appear in the same factor sets across two or more settings. Altogether, five distinct variable groupings were identified. The first grouping (of three variables)

related to the technical change process support provided by the individual's immediate superordinates. The second grouping (of three variables) related to the top level administrator's commitment to and approval of the change and support for others' efforts. The third grouping (of fourteen variables) related to the informal and formal structure of the organization in terms of impact on the change process. Some of the variables clustered together were individuals being: (1) adequately involved in the process, (2) held accountable for their roles, (3) allowed to share in change decisions, (4) favorable towards the change, (5) seen as influential in the process. Variables in this grouping seemed to be describing the social, psychological, organizational dimension of a change effort. For example, the informal structure variables described the psychological or environmental health of either the user's perception about the change or his/her significant reference groups' perceptions about the change. The formal structure, on the other hand, described the functional, operational health of the organization. In both situations, a healthy informal/formal environment was conducive to successful change.

The fourth grouping (of ten variables) related to the nature and quality of support provided those individuals involved in the process. Of particular importance was the technical information provided individuals through orientation and inservice training programs. The fifth cluster (of two variables) related to the amount of time the immediate and top level administration spent with individuals working on the change. The more time spent with the user, the more successful the change effort.

CONCLUSIONS AND IMPLICATIONS OF THE STUDY

Conclusions: Development of a Contingency Model of Change

Five major conclusions were drawn from the study's findings. Each conclusion outlines the nature of the proposed contingency model. First, the model appears to have generic and situation specific factors. Both the a priori and principle component factors were judged to be equally necessary for understanding change and changing. The systems factors were judged useful in providing managers with a diagnostic tool for identifying the elements of change with which they would have to deal. Of particular importance were the factors related to the nature of the informal and formal organizational structure and administrative support roles. The principle component factors were judged useful in providing managers with a prescriptive (situation specific) tool for identifying those elements within their own organizations which they would have to strengthen or emphasize in order to successfully institutionalize an innovation. For some organizations, those elements related to providing necessary technical support for the change effort, setting up lateral communication networks, and developing integrative levels between the various change groups were of particular importance.

Second, the model is designed to take into consideration the unique perceptions of major groups involved in a change effort. The belief structures of all individuals in an organization need to be considered in order to implement the program. Managers interested in successfully implementing changes should be aware of these different perceptions (especially those of their subordinates) and should plan to meet their subordinates' needs as well as their own. Usually, the individuals most directly involved in the change effort are more concerned than other groups with: (1) the availability of resources and materials; (2) the utility of orientation and inservice

training programs; (3) the existence of organizational rewards to support the change effort; (4) the relative advantage of the change; and, (5) the amount of administrator support for the change. Usually, the administrators or managers of the change are more concerned than others with: (1) the availability of established feedback systems; (2) the ease with which the program can be implemented; (3) support from the top administrators or leading pressure groups; and, (4) the existence of effective and efficient communication systems.

Third, the model can be organized and presented in a relatively simple fashion. The simple factor regression solutions were judged to be as acceptable and useful for predicting changes as the complex variable solutions. In addition, these factor solutions were seen as more reliable, accurate and stable and more feasible for use with a small number of respondents.

Fourth, five of the basic organizational change strategies studied can be applied across all organizations and can be included in a contingency model. The five strategies are:

.... setting up a supportive informal network within the organization so as to establish a favorable psychological climate for individuals' undertaking the change

.... setting up communication/information programs and networks for exchanging technical and procedural data about implementing the change

.... differentiating between the change groups (e.g. identifying each individual/groups' change role, area of accountability and autonomy, etc.)

.... integrating the change activities of individuals/groups by keeping them informed of each others' activities, providing feedback on their performance and setting up formal structures for disseminating change information

.... having the administrative staff provide technical support at the middle management level and psychological support at the top level

While these clusters of variables (strategies) appeared to be important in all settings, their relative importance varies across settings. It is likely that the interaction of these five components is defined by the situational context within each organization.

Fifth, the clustering of any one change variable within the proposed model is seen to be situation specific. Only 28 of the 52 selected variables were found to consistently group with other variables. It is likely that the five factor constructs identified as constructs across all organizations are more important than individual variable membership. Certainly, the initial complexity of each variable illustrates the highly interactive nature of all the variables. As such, a manipulation of one variable is likely to impact on several dimensions of the model. The relative impact is more a measure of the specific organization context in which change is occuring than the nature of a genuine variable structure.

Implications

Three different sets of implications are drawn from the findings of the study. The implications are related to the institutionalization of changes, change theory, and further research.

Implications for institutionalization of change--It is believed that managers can be more successful in institutionalizing change if they organize their efforts around two major activities. First, they need to prepare the organization to accept the change and, second, they need to assist the organization to implement the change. Both these phases need to be planned in detail.

Preparing the organization for change is likely to be the most important part of the institutionalization process, since orientation to the change program

leads to an individual's initial acceptance or rejection of the change. To set up an "adequate" orientation environment (to assure the positive acceptance of the change), six steps need to be followed. First, time needs to be set aside for the proper introduction of the change. Formal orientation workshops, organizational meetings, and in-service seminars need to be planned for and organized for the orientation phase and afterwards. Second, the change needs to be packaged and presented so that it is easily understood, easily referenced and related to performance results in other similar organizations, and easily seen as possessing specific operational objectives. If this is done properly, the relative advantage of the change program (the single most important attribute of a change's acceptance) can be visible. Third, the supportive services and resources available to the institutionalization effort need to be identified, obtained, and confirmed so that users of the change will see that their efforts in the change process will be supported. Fourth, the requirements for each individual in the institutionalization process and the change in each individual's role after the change is institutionalized have to be described. These last two steps relate to the second most important attribute affecting the acceptance of a change - whether the individual perceives that it will be realistically easy to institutionalize the change program and relatively unthreatening to his role afterwards. Fifth, the acceptance and support of the users' immediate supervisors for the change program and change process need to be acknowledged and proclaimed so that the users of the change will be inclined to undertake the change effort (since their supervisor seems to be interested in their doing so). Sixth, the specific roles and relationships of the users, administrators, support personnel, and agents of change need to be clearly and specifically described for each individual likely to be involved in the change program and

change process. If this happens, each individual will know what to expect in the process of institutionalization, what he will be accountable for in the change program, and how he is to relate to others during and after the change activity. At this time, formal mechanisms need to be set up so that users (through in-service programs) and managers (through continuing training programs) can assume their new required roles more effectively.

After the change is introduced into the organization, managers need to turn their attention to developing an effective support structure for the change effort. First, the supportive services need to be obtained and made readily available to those individuals working on the change. This step is more important in the initial phases of the institutionalization process since in this phase personal investiture and identification with the change may be less internalized. In later phases of the process, the individual can accept more responsibility and less support for the change effort, since he is likely to be more committed to the change program. Second, the administrators must make sure that the organization's communication channels are freely and frequently used so that information about the change process is transferred throughout the organization. Particularly important is communication at the level of users involved in the process of change. Feedback, also, is important at the level of the administrator who is indirectly involved in the change activity. In order for the communication channels to be used effectively, administrators need to provide rewards (encouragement, example setting, verbal praise, and publicity) for their use. If information channels are used, individuals can have adequate information to deal with problems in the institutionalization of the change programs when they occur, not after they have become dysfunctional to the organization. Third, rules and standard operating procedures need to be relaxed within the particular segment of the organization undergoing the change process so that creative and varied approaches and experiments with

the change program are promoted. At the same time, rules and standard operating procedures need to be maintained at the support level of the organization, since they are less directly involved with the change process and still need to provide continued change support. Fourth, the roles assumed by the agents of change have to be integrated and their contact with the users of the change have to be frequent and individualized. This is possible if the varied agents of change (technical consultants, process consultants, researchers and managers) are properly selected initially and adequately trained to develop and use a repertoire of responses to unique events, problems, and individual respondent types. Training modules related to problem solving techniques, human relations, and personal behavior modes can be used in the training of the agents. Problems likely to be encountered in the institutionalization effort need to be catalogued by the support group in the organization and the agents should have formally defined times for getting together (as a team) to develop solutions to these problems. Teams of agents will be potentially more effective in dealing with problems than individual agents since teams are less threatening and more influential in convincing individual users and administrators to work with the change program. Fifth, the individual user has to "feel" that he is adequately involved in the change process so that he/she is inwardly encouraged to make the extra effort required in the change process. For this to happen, in-service meetings and programs have to be formally established throughout the process of change. Throughout the change effort, the top administrators, support personnel, and agents of change have to be kept informed of the demands of the change program and the middle administrators and users need to be directly involved in decision-making and policy-making about the change process and program.

Implications for change theory--In general, the findings of this study

corroborate the findings and theories espoused in other change studies. First, many of the change variables studied or proposed by others were related to successful institutionalization of changes. Second, some of the systems of change described by others (e.g. Bennis, Benne and Chin, 1969, 1976,etc.) were contained within the simple factor structures developed in this study.

Third, the findings of this study supported the two major perceptions about change: one view argues for the development of a generic change model and the other argues for the development of a situation specific change model. Both views were followed in developing this study's model.

Fourth, these findings supported the current thrust of the most noted organizational change theorists who have concluded that it is more important to analyze the entire organization where change is to occur rather than to apply an external change strategy without noting the situation in which it is to be placed. The application of organizational development tools and the use of trained change agents are developments which follow general change guidelines as well as accounting for the particular situation in each organization undertaking a change. These ideas give solid support for the contingency framework developed within this study.

Implications for further research--Three recommendations are made about the kind of research needed to help support and extend the present utility of this study. First, the model of change proposed in this study should be tested in other private and public organizations. If the model continues to have utility, management training programs can be developed to encorporate these principles. Second, different sets of regression models should be developed and tested for different stages of the change process. Models related to the adaption, implementation and routinization stages of the process should be developed and compared and their predictability to actual situations should be

analyzed. Third, the process strategies identified in this study should be analyzed in relation to the types of change attempted and desired outcomes expected. Different changes may require different change strategies and result in different outcomes. Fourth, the instruments used in this study need to be refined and modified. If possible, variable measures need to be more clearly devised so that managers planning for change can use an instrument to identify the set of variables/factors more critical to their organization's change efforts.

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